by Derek Morrison

Elite racing cyclists we do admire
So we must use their size of tyre
But from this thinking we should cease
Because rolling resistance it does increase.

Such an idea may fly like an arrow
Towards our beloved tyres so narrow
But listen here and then pay heed
Fatter tyres can mean higher speed.

True performance athletes are one thing
For them air resistance is the sting
But with a speed average below 20 miles
Other physics should cause some smiles.

A narrow tyre does deform
Further away from its circular norm
And that can energy absorb
Because the wheel is now a lesser orb.

Also too high a pressure on a normal road
Simply increases your cycling load
Because over irregularities you then bounce
Potential traction energy absorbed by the ounce.

It also worth considering at this juncture
That fatter tyres resist that puncture
Because they suffer less from pinches
Thanks to that smaller fraction of inches.

Fat also makes a better ride
Over surfaces which you just can't glide
And the contact patch gives you greater grip

To escape those gotchas on which you'd slip.

If genuine time or track athlete you may be
Then continue narrow with certainty
But for everyone else don't emulate
Because fatter is a better state.

So seven hundred by twenty three
Probably won't help most climb the tree
If as an endurance road cyclist you do thrive
Opt for at least seven hundred by twenty five.

[To listen to this verse select below]

http://www.cyberstanza.com/wp-content/uploads/2015/02/ResistingChange.mp3

(continued: see Notes & Sources)

Notes and Sources

The conventional wisdom is that narrow tyres on road bikes are best. I thought, however, I would ask around before replacing mine. The conventional view is that narrow is best but then it was suggested to me (thanks Will at Cadence, Bath) that research does not necessarily back this up. So I decided to look for some of the evidence for this different view. That, in turn, has informed the poem above. In essence the answer to what tyre width is best seems to depend on what type of cyclist you actually are (rather than what you aspire to or fantasize about being).

The Fallacy – Racing cyclists are faster than the rest of us and they ride narrow tyres, so in pursuit of speed we should do the same.
(http://www.cyclingweekly.co.uk/news/latest-news/tyre-trends-set-change-113752#Rb8lFrQ3TfRYu4sw.99)

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Rolling resistance is the energy that is lost when the tire is rolling and the main reason for loss of energy is the constant deformation of the tire.
(http://www.schwalbetires.com/tech_info/rolling_resistance)

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At the same tire pressure, a wide and a narrow tire have the same contact area. A wide tire is flattened over its width whereas a narrow tire has a slimmer but longer contact area…The flattened area can be considered as a counterweight to tire rotation. Because of the longer flattened area of the narrow tire, the wheel loses more of its "roundness" and produces more deformation during rotation. However, in the wide tire, the radial length of the flattened area is shorter, making the tire "rounder" and so it rolls better.
*(*http://www.schwalbetires.com/tech_info/rolling_resistance)

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Many road cyclists still prefer extra speed and that's what fatter tyres offer at riding speeds of 20mph and below. Here, where rolling resistance is more important than wind resistance, is where most sportive and touring cyclists spend their pedalling time. It's also where a 25c tyre of the same carcass construction, tread compound and thickness will outperform its 23c sibling.
(http://www.cyclingweekly.co.uk/news/latest-news/tyre-trends-set-change-113752#Rb8lFrQ3TfRYu4sw.99)

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At constant speeds of around 20 km/h, the ride is better with wider tires. In practice, the energy saving is even greater than in theory as the elasticity of the tires absorbs road shocks, which would otherwise be transferred to the rider and so saves energy.
(http://www.schwalbetires.com/tech_info/rolling_resistance)

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Riders have argued for years that narrower tires – especially on the road – roll faster and are more efficient than wider ones when in fact, the opposite is true. According to Wheel Energy, the key to reducing rolling resistance is minimizing the energy lost to casing deformation, not minimizing how much tread is in contact with the ground. All other factors being equal, wider casings exhibit less 'bulge' as a percentage of their cross-section and also have a shorter section of deflected sidewall.

(Bicycle tires – Puncturing the Myths, Bike Radar, 12 February 2011 http://www.bikeradar.com/gear/article/bicycle-tires-puncturing-the-myths-29245/)

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For an equivalent make and model of tire, Wheel Energy claim the 25mm-wide size will have five percent lower rolling resistance on average – the supposed average limit of human detection – than the more common 23mm one. However, 23mm and narrower tires do still have the advantage when it comes to aerodynamics, and to a lesser extent weight. If you're selecting a tire for drag strip time trials, narrow is the way to go, but if you want a better handling tire for road racing and crits, go wider – particularly for rough road surfaces.
(Bicycle tires – Puncturing the Myths, Bike Radar, 12 February 2011 http://www.bikeradar.com/gear/article/bicycle-tires-puncturing-the-myths-29245/)

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Tread pattern matters, even on the road: The importance of tread pattern is no surprise to the off-road world but common wisdom says it's a non-factor on the road, where slick treads are assumed to deliver the greatest surface contact with the ground and thus, the best grip. However, asphalt is far from a perfect – or even consistent – material. Certain tread designs can provide a measurable mechanical adhesion to the ground.
(Bicycle tires – Puncturing the Myths, Bike Radar, 12 February 2011 http://www.bikeradar.com/gear/article/bicycle-tires-puncturing-the-myths-29245/)